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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,148	03/24/2004	Masaharu Itaya	50024-027	3704

7590 05/12/2009  
McDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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MARTIN, ANGELA J

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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05/12/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/807,148	<b>Applicant(s)</b> ITAYA ET AL.	
	<b>Examiner</b> ANGELA J. MARTIN	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-26 is/are pending in the application.
- 4a) Of the above claim(s) 10-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office Action is responsive to the Remarks filed on February 13, 2009. Applicant's arguments, see pp. 2-4, filed February 13, 2009, with respect to the rejection(s) of claim(s) 1-3, 5-9 under 35 USC 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as described below.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu May-Ying, WO 96/16450, in view of Zhang et al., U.S. Pat. 6,312,853.

Chu May-Ying teaches a non-aqueous electrolyte secondary battery comprising a positive electrode (p. 7, lines 3-7), a negative electrode (p. 26, lines 17-21), and a non-aqueous electrolyte (p. 8, lines 28-29 and p. 9, lines 1-8), wherein said positive electrode includes elemental sulfur (p. 7, lines 3-7), and said negative electrode includes silicon that stores lithium (p. 26, lines 17-21)); and liquid non-aqueous electrolyte includes an imide electrolyte (p. 8, lines 28-29, p. 9, lines 1-8; p. 26, lines 1-8). It teaches electrolyte includes a room temperature molten salt having melting point

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of not higher than 60 deg C (p. 29, lines 19-21). It teaches molten salt includes trifluoromethanesulfonimide (p. 26, lines 1-8). It teaches wherein the non-aqueous electrolyte secondary battery wherein said non-aqueous electrolyte further includes at least one type of solvent selected from the group consisting of cyclic ether, chain ether, and fluorinated carbonate (p. 25, lines 6-11). The non-aqueous electrolyte secondary battery according to claim 6, wherein said cyclic ether includes at least one type selected from the group consisting of 1,3-dioxolane and tetrahydrofuran; said chain ether preferably includes 1,2-dimethoxyethane (p. 25, lines 6-11) teach the non-aqueous electrolyte secondary battery according to claim 1, wherein the non-aqueous electrolyte secondary battery according to claim 1, wherein said silicon is an amorphous silicon thin film or a microcrystalline silicon thin film (p. 26, lines 17-21). The non-aqueous electrolyte secondary battery according to claim 1, wherein a conductive agent is added to said positive electrode (p. 31, lines 1-9).

Zhang et al., teach a secondary battery comprising an electrolyte including a quaternary ammonium salt (abstract; col. 4, lines 33-60). It teaches the salt is a trimethylpropylammonium, trimethylhexylammonium (col. 4, lines 41-67; col. 9, lines 12-64).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Zhang et al., into the teachings of Chu May-Ying because while Chu May-Ying teaches an imide electrolyte, and teaches the same imide group as in the present application, Zhang et al., teach a quaternary ammonium salt. The imide of Chu May-Ying is a portion of a quaternary salt, thus one

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skilled in the art would be motivated to employ a quaternary salt because this salt has a high solubility in an organic solvent and provides a secondary battery which has a high energy density, a high charging-discharging efficiency, a long cycle life, a good voltage levelness and a low self-discharge rate. Additionally, the melting point of the quaternary ammonium salt would fall in the range of not higher than 60 degrees C.

### ***Response to Arguments***

3. Applicant's arguments with respect to above claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA J. MARTIN whose telephone number is (571)272-1288. The examiner can normally be reached on Monday-Friday from 10:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM  
/Angela J. Martin/  
Examiner, Art Unit 1795